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TARC NEWSLETTER

TITUSVILLE AMATEUR RADIO CLUB

January, 1993

OFFICERS

President: Bud Hughes K4CWG 269-0779 Secretary: Jerry Russell KC4UFI 267-2157
VicePresident: Cliff Hoag KC4SYD 267-7030 Treasurer: Clyde Lee K4EOS 267-9375

PRESIDENT'S CORNER

By Bud Hughes K4CWG

Many thanks to all who are assisting Jose in the TARC no-code class. It is through Jose's leadership that the class is off to a great start....33 students. WOW!

Continued and growing interest in the fox hunt is making the fox nervous. Would you ever think there would be such a turn out? Interest in directional antennas, antenuators and sniffers is adding spice to the fox hunts. KB3GK, John Munsey found the fox in 24 minutes..

Don't forget January 26, 1993, club meeting. Bring a friend. 73 Bud K4CWG

UPCOMING HAMFESTS

1/23.....Crystal River
1/24.....Pinellas Park
2/6&7.....Miami
2/13.....Pensacola
2/19&20.....Sarasota
2/20.....Stuart FREE!
2/27.....Brooksville
3/12&14.....Orlando
3/20&21.....Ft.Walton Beach

SILENT KEY

KD4JTM, Parker Cox, Sr.
died in late December, 1992.
We will miss him.

MEMBERSHIP UPDATE

By Clyde Lee K4EOS

Congratulations to Kay Watson and Jack Hall on getting their call signs. Kay is KD4VFQ. Jack is KD4VFU. We look forward to hearing them on the 91 machine. Kay has volunteered to be the refreshment chairman this year. We look forward to home baked goodies each month. (Just kidding, Kay)

Welcome back to two old members KB4BHS, Glenn Lee and N4SCZ, Ron Allen

We also welcome new member Henry Morris, KD4VFS.

Last but by no means least, the following have renewed their memberships.

WB1DBZ,MontyMontplaisir K4BZJ, Les Widdick
KD4HON, George Fischer KB4JAM, Jack Colsen
KA4LTK, Lloyd Mullens KB4RBU, Vern Bauer

Club membership is now 193.

NEW LICENSE ADVISORY

By Carl Zellich AA4MI
AARL Asst. Director, S.E. Division

The FCC has asked Volunteer Examiners to advise those taking amateur exams that 120 days from the date of the exam is the approximate time it takes to receive a license from the commission. The FCC says efforts are continuing to reduce this processing time.

Thr FCC asls tjat applicants not inquire on the status of an application until it has been pending more than 90 days with the Commission. Year end staff shortages at the commission's Special Services Branch are cited in the recently increased processing times.

PROTOCOL PROJECT

By Carl Zelich, AA4MI
(from Ed Juge W5TOO
Chairman ARRL Digital Committee)

The ARRL Committee on Digital Communication has begun a project to define a standard for the interchange of messages between amateur bulletin board systems. Craig McCartney, WA8DRZ has been appointed project coordinator and Vic Poor, W5SMM alternate coordinator. The Committee has accepted an offer from Bob Arasmith, NOARY to use his Packet/Internet BBS as a collection point for all documents related to the project, and to act as librarian and editor for the project.

Interested amateurs are encouraged to contribute specifications for currently used software, comments, suggestions or any data that would contribute to drafting a final specification. The initial phase of the project is to establish current practices in writing, and to draft a minimum set of functions that an amateur BBS should perform for inter-bbs compatibility.

Information contributions to the project should be addressed to:
NOARY@NOARY.#NOCAL.CA.USA.NA over amateur channels or NOARY@arasmith.com over Internet.

HARD TIMES: Due to additional budget constraints, the light at the end of the tunnel will be turned off until further notice

A SUMMARY OF SAREX MISSIONS IN 1993

By Will Marchant
University of California

SAREX is the Shuttle Amateur Radio EXperiment. A chance for radio amateurs to chat with the shuttle.

My information source is the September/ October issue of "The AMSAT Journal". AMSAT can be contacted at (301) 589-6062. Remember that shuttle launch dates change. These dates are based on the NASA flight manifest posted to sci.space.shuttle on 11/27/92 by hollis@tital. ksc.nasa.gov

STS-55 02/25/93 SAREX configuration C: 2-meter voice and packet and German SAFEX Anateur Radio station operating 70CM voice using a dual band (2m/70cm) whip on the exterior of the Spacelab module. TBD? days, 28.5 degree inclination, two(?) hams on board: Steve Nagel N5RAW and Jerry Ross N5SCW.

STS-56 03/23/93 SAREX configuration D: Voice, packet, SSTV and ATV uplink. Nine days, 57 degree inclination, 4 hams on board: Ken Cameron KB5AWP, Ken Cockrell KB5UAH, Mike Foale KB5UAC, and Ellen Ochoa KB5TZZ.

STS-57 04/29/93 SAREX configuration C. Seven days, 28.5 degree inclination, 1 ham on board: Brian Duffy N5WQW.

Looks like a great year for SAREX! STS-56 looks like it will be especially good!

TREASURER'S REPORT

By Clyde Lee K4EOS

Bal.from old acct.	$1012.00
New deposits	765.00
Balance before expenses	1754.00
Expense payments	408.69
Bal. as at 1/19/93	$1345.31

We have closed the account at Nations Bank, and have opened a new account at Community Educators, where thare are no bank charges. We are required, however, to maintain a $25 savings account balance.

A more detailed financial report will be forthcoming in the February issue after I've had a chance to acclimate myself to all the financial details. Also in February I will give you a detailed report on the money owed to Bud, K4CWG.

FRIENDSHIP NET UPDATE
By Cliff KC4SYD

146.910 - 600 MHz - Thursday, 6:30 p.m . (EST). Response to the net has been FUN-OM-INAL for the past two months. Checkins resulted in the following: 12/3 - 39; 12/10 - 39; 12/17 - 41; 12/24 - 28 (well, it was Christmas Eve); 12/31 - 40; 1/7 - 47.

Our monophonic audio bulletin board (MABB [Acronym left over from our aerospace background) seems to be a great way of keeping the devoted members up to date on club activities. The unorthodox method of checking in keeps our clientele on their toes and seems to be more democratic, especially to those folks with unfortunate call signs (see page 4 of the roster).

We welcome all the new hams that have just received their license, while we will sadly miss K4GEA, Morgan and KD4JTM, Parker, who became silent keys in the past month.

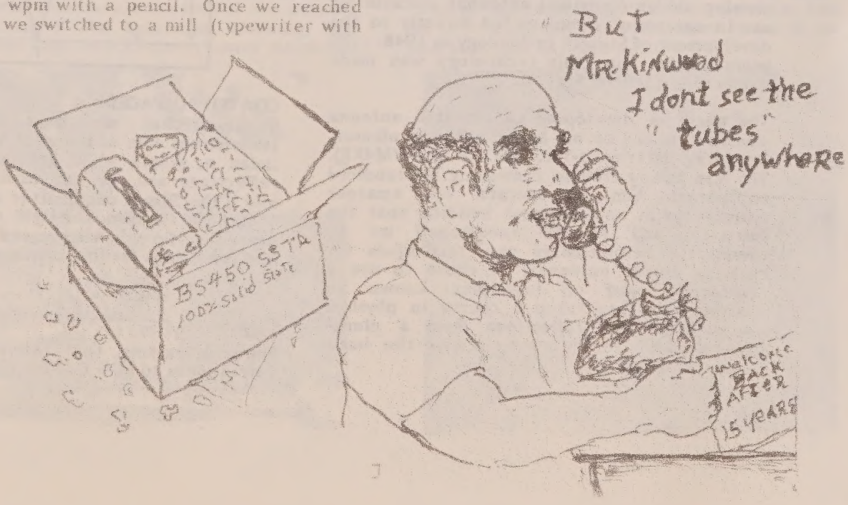
MILITARY METHOD FOR CW PROFICIENCY AND LEARNING

By John L. Broughton, AT&T

I was an 058, morse code interceptor, in the ASA (Army Security Agency) and trained at Ft. Devens, MA. While it is correct that spending 20-30 minutes a day on CW is very good advice for amateurs, we did train for hours a day. After learning all the characters, and I don't remember exactly how we did that, we started copying coded letter and number groups at about 5 wpm with a pencil. Once we reached 10 wpm we switched to a mill (typewriter with only upper case letters). Based on obtaining proficiency at one speed, we then moved on to a higher speed. The whole training lasted 6 months and I was at about 28 wpm when I graduated. I don't remember what the highest speed was that was reached in class. I ended up on a net in Germany that was running about 45wpm and this net was never silent for more than about 5 minutes at any given time; it was active 24 hours a day, 365 days a year. Because we combined our 4 tricks (shifts) into 2 for the holidays, everyone got 6 days off either for Christmas or New Years, and worked 12 hour shifts the other 6 days, I was on duty from 1800 hrs to 0600 hrs over New Years. At exactly midnight on New Year's Eve, the net control I was copying started sending "Happy New Year" in English. This is the only time the net ever sent anything other than 5 character coded groups. Still today QSA IMI (QSA ?) is burned into my gray matter.

BTW, copying code by using a typewriter or computer to write it down is great for high speeds. However, you never learn to copy in your head this way. Why? Well, it became reflex; you hear ._ and you automatically typed an A. We never really realized what we had copied unless we actually looked at the paper to see what we typed. Also, you end up copying behind the actual sending. You aren't aware of this until you one day realize that the operator has quit sending but you are still typing.

It is also true that CW has been abandoned by the military and by the commercial marine services. Ship's radio officers no longer have to know morse code.



APPLICATIONS OF STEALTH TECHNOLOGY TO THE DESIGN OF INVISIBLE ANTENNAS

By Professor Emil Heisscluft
Lauton Institute Grossmaul-an der donau, Austria
(Taken from CQ, April, 1981)
(Submitted by Jim Meeks N4ZNQ)

It was only last year that the communications world was shocked to learn that sporadic-E was not a natural-occurring phenomenon, but rather was produced by wire grids which floated 60 miles above the Earth (see CQ, April, 1980.) Now, the defense establishments around the world will be left aghast at the revelation that Stealth technology was developed at the Lauton Institute almost 30 years before the same technology was developed by the United States. In this exclusive article for CQ, Professor Heisscluft reveals for the first time how he was able to produce a Stealth antenna for use in apartment complexes, and how the same Stealth techinques were used to produce the first Stealth aircraft!..... K2EEK

INTRODUCTION

In the days following World War II, dear readers, numerous apartment buildings were constructed throughout Austria to house the many homeless people of my devasted homeland. At the same time, there was a rebirth of amateur radio in my country. These two events were to have far-reaching consequences with respect to national defense, for the need to develop hidden (invisible) antennas suitable for use in apartment complees led directly to the development of Stealth technology in 1948. . .30 years earlier than this technology was made public in the United States!

The need for developing an invisible antenna was first voiced to me by my optics professor, Dr. Jerzy Ostermond-Tor, D.O.S.E. (ex YM4XR). Tor was having trouble convincing his landlord to permit him to operate his amateur transmitter in an apartment building near the institute, and so, he encouraged me to investigate revolutionary new techniques for creating hidden antennas. I chose to use a technique based on principles known to everyone who has taken a course in physical optics: multiple reflections from a plane-parallel film. Permit me to review the basic theory involved.

MULTIPLE REFLECTIONS FROM A PLANE-PARALLEL FILM

The Stealth antenna I designed was based on the principle that interference involving multiple reflections from a plane-parallel film can be used to minimize or maximize light reflected from the film. That this is possible can be seen from the diagram shown in fig. 1. Here, two consecutive rays - one reflected from the top of a thin film, and one reflected from the botton - have an optical path difference of Δ:

$$\Delta = n' \cdot (AFB) - AD$$

where n' is the index of refraction for the film. Taking into account that ray 1 undergoes a phase change of at reflection, and that ray 2 does not, it may be shown that for destructive interference:

$$2\pi d \cdot \cos\phi' = m\lambda \quad \text{(minima)} \quad (1)$$

where λ is the wavelength of light and m = 0, 1, 2. . .(i.e., the order of interference).
For constructive interference:

$$2nd \cos\phi' = (m + \tfrac{1}{2})\lambda \quad \text{(maxima)} \quad (2)$$

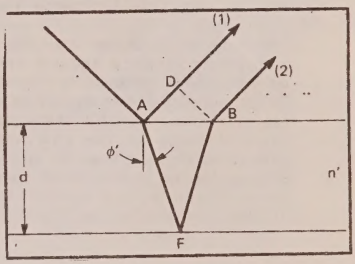


Fig. 1

COATED SURFACES

Suppose that we now deposit a thin, transparent film of index n' over a material of index n, where n' is greater than n. Both reflections are, in this case, "rare-to-dense," and if the film is one-quarter of the wavelength of light in the film, the light reflected from the coated surface is suppressed by interference. The conditions for this case are given below:

$$d = \frac{\lambda}{4n'} \quad (3)$$

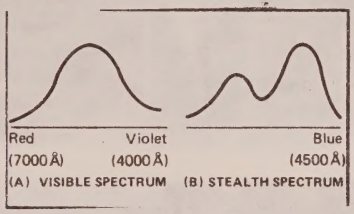
$$\text{AND } n = \sqrt{n} \quad (4)$$

Note, in passing, that this condition (Eq. (3)) corresponds to m = 0 in Eq. (2), which now

represents a minima condition because the reflections at both surfaces of the thin film are "rare-to-dense."

In developing the first Stealth antenna I chose the condition (that is, I chose the correct thickness for the film) such that destructive interference occurred for wavelengths near, but slightly below, the middle of the visible spectrum. In this way, the light reflected from the film was predominatly blue. . .blue enough so that the film could not be seen against a blue sky! (See fig.2)

Fig.2



INVISIBLE ANTENNAS

With the Stealth technique developed, Tor and I proceeded to build the first Stealth antenna. Since it was an "all or nothing" proposition for us - that is, the detection of a small antenna would lead just as quickly to eviction as would the detection of a big antenna - we decided to use a 5-element Yagi on a 16-meter boom! First, a clear plastic of relatively high index of refraction was sprayed on all of the antenna's elements and on its boom. We then evaporated a thin film of magnesium flouride on the plastic film such that the conditions in Eqs. (3) and (4) were satisfied. This accomplished, we scraped those portions of the antenna where electrical contact was necessary, reassembled the antenna on the roof of the apartment building, and erected the Yagi on a 22-meter tower which had also been given the Stealth treatment. The results were absolutely amazing, as can be in fig. 3. Here, the Stealth Yagi and its tower are shown on top of the apartment building in the center of the picture. Note that while the Yagi dwarfs the apartment building, no visual disturbance to the environment occurs. This antenna, by the way, is still standing on top of the old apartment building, and it was used by Tor (now OEX4) during our spread-spectrum experiments of 1961.

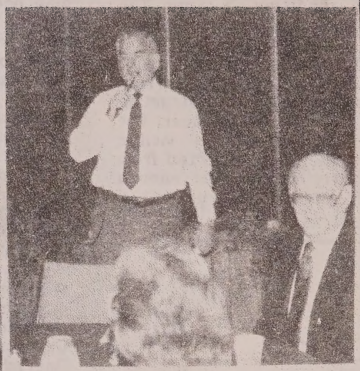
OTHER STEALTH EXPERIMENTS

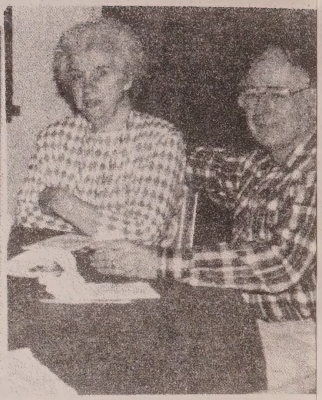
Based on our success with the Stealth antenna, Tor and I immediately briefed personnel of the Austrian Defense Ministry. At that time, the Ministry was conducting tests on an experimental swept-wing airplane similar to the Blohm & Voss P-209 developed by the Germans during WW11 (see, for example, "Die Deutschen Flugzeuge, 1933-1945"). It was agreed that the institute would treat the experimental airplane using our newly-developed Stelth technology. The result, as expected, was impressive. The airplane, shown in fig. 4, flew numerous missions around the world without ever being detected, and it was the forerunner of Rockwell International's Sabrebat aircraft. I regret to note, however, that after it's 10th mission, a flight to Tel Aviv, Israel, the pilot forgot where he had parked the craft, and it was never seen again.

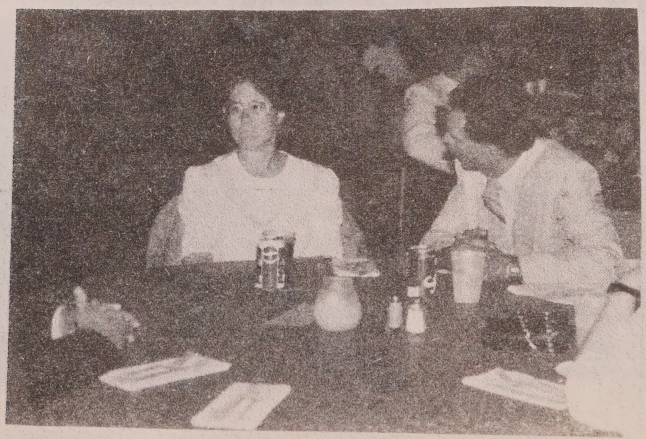
CONCLUSION

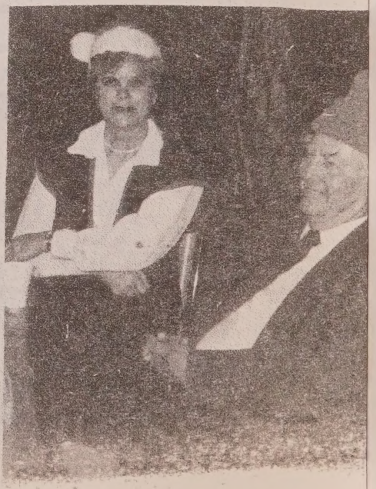
In this paper, I described how Stealth technology was developed and used at the Lauton Institute in the late 1940's to produce invisible antennas. That we were successful is demonstrated by the fact that our 5-element Stealth Yagi on a 16-meter boom has still not been seen on top of the old apartment building. Clearly, our technology in hidden antennas has yet to be equaled despite continued research on such antennas by leaders in the field.

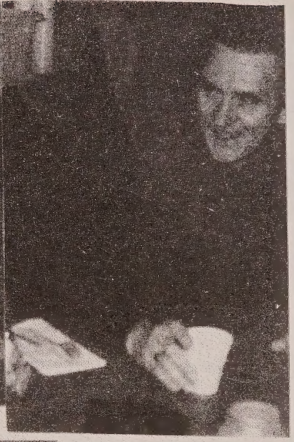
Fig. 4











HAPPY BIRTHDAY

By Dr. John Wood Robinson

When your birthday rolls around every year are you happy about it or are you one of the people who says, "What's happy about another Birthday?" Children are always happy about birthdays but the opposite is true of most adults. It seems to be human nature for the young to want to be older and those who are getting older to want to be young.

But we need not be afraid of birthdays if we are constantly looking forward to the days ahead. The spirit of youth is one of looking to the future and as long as we keep the spirit we will stay young, no matter how many birthdays we celebrate. We become old when we develop a gloomy attitude and are afraid of that which is before us.

Why not enjoy and appreciate things you have today and look forward with eager anticipation to the days ahead? In this way you will never really grow old and every birthday will be a happy occasion.

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